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A COMPARISON OF TALENTED SOUTH AFRICAN AND ENGLISH YOUTH RUGBY PLAYERS WITH REFERENCE TO GAME-SPECIFIC-, ANTHROPOMETRIC-, PHYSICAL AND MOTOR VARIABLES

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ABSTRACT

Research on talent identification in youth rugby is still unexploited. The aim of this study is a comparision of talented South African and English youth rugby players (18-year old) with reference to game-specific-, anthropometric- and physical and motor variables. Three groups of elite rugby players were selected from the two countries and were tested on 13 anthropometric-, six physical and motor- and eight game-specific tests. The results showed that there are no big differences as far as anthropometric variables are concerned, the English players, however, significantly demonstrated the worst results in all the physical and motor abilities while the South African players performed the best in game-specific skills due to possible better coaching.

Key words: Elite youth rugby players; 18-years-old.

INTRODUCTION

During the past ten years several studies have been done on the profile of elite youth rugby players (Spamer, 2000). Many characteristics of the talented or elite rugby player were researched at age levels that varied from 11-year olds to senior international players. The research project that was initiated in 1994 concentrated on several aspects of elite youth rugby players and the aim of this project is to look at different aspects of the profile of talented youth players. Research, already completed, concentrated on longitudinal studies of potential talented players from the age of 11-years to 17-years-old (Spamer & Hare, 2001), practical models to identify potential talented players (Pienaar & Spamer, 1998), prediction functions for different age-groups (Pretorius, 1997; Van Gent, 2003), norm scales of performance for different age groups and positions (Van der Merwe, 1997; Spamer, 2000; Spamer & Winsley, 2003b), anthropometric-, physical-, motor and game specific variables that distinguish talented players from less talented players (Spamer, 2000), and a battery of tests that can be used by coaches to identify talented players according to playing position (Van Gent, 2003). This research project on talent identification and development among youth players is now a combined project between researchers of South Africa, England and New Zealand and some of the results by these countries have already been published (Spamer & Winsley, 2003a).

Research on talent identification in youth rugby is still unexploited, partially because research in talent identification in team sport is more difficult than individual sports due to the number of variables that can play a role. After the game of rugby became professional in 1995, research in this sport is more popular (Noakes & Du Plessis, 1996). However, very few studies to date compare the performance of elite youth rugby players of different countries.

AIM OF THE STUDY

A comparison of talented South African and English youth rugby players (18-years old) with reference to game-specific-, anthropometric- and physical and motor variables.

METHOD OF RESEARCH

Three groups of elite under 18-year old rugby players were selected: the first group consisted of the first team of the Ivybridge Sport School in South Western England (N=22) and two groups from South Africa, viz. the Craven Week teams for high schools of the Blue Bulls (N=20) and the Leopards (N=22). The elite players were tested during the peak season of 2003 (Plotz, 2004).

The battery of tests used, consists of 13 anthropometric variables (mass, length, triceps-, sub-scapular-, mid-axillary-, supraspinal-, pectoral-, abdominal-, thigh- and calf skinfold, upper arm-, ankle- and calf girth) according to the International Group on Kinanthopometry (Ross & Marfell-Jones, 1991), six physical and motor ability tests (sit- and reach test, vertical jump, zig-zag run for agility, speed and grip force, left and right) (Hattingh, 2003), and eight game-specific skills (ground skills, side steps, air and ground kicks, passing for distance, passing for accuracy over 4 metres and 7 metres, kicking and kick-off for distance) (Pienaar & Spamer, 1998). The battery of tests was executed by post-graduate students in Sport Science during the peak season of 2003.

Descriptive statistics and practical significance (d-values) was used to compare data (Cohen, 1988).

RESULTS

Anthropometric Variables

According to Table 1 the English players weighed the heaviest ($\bar{x}$=87.84 kg) followed by the Blue Bulls ($\bar{x}$=87.38 kg) with the Leopards weighing the least. If length is considered as a variable, the Blue Bulls are the tallest ($\bar{x}$=185.61 cm) with the Leopards the shortest ($\bar{x}$=179.52 cm). Regarding the rest of the anthropometrical variables, no noteworthy differences were found that could provide a typical morphological uniqueness to a specific group.

Very little can be reported according to the practical differences between the groups. The only variables between the Blue Bulls and the English players that meaningfully differ, are the pectoral skinfold (d=0.81), calf skinfold (d=1.05) and the ankle girth (d=1.48). There is practically no significant difference between the two South African teams.

If the Leopards are compared to the English elite players, practical meaningful differences are found between the pectoral skinfold (d=0.91), calf skinfold (d=1.27), ankle girth (d=1.45) as well as calf girth (d=0.95). The results showed the same tendency as those between the English players and the Blue Bulls. With regard to anthropometrical variables there are not many big differences between the profiles of these three groups.

TABLE 1. **DESCRIPTIVE STATISTICS AND PRACTICAL MEANINGFUL DIFFERENCES (D-VALUES) BETWEEN ELITE BLUE BULLS-, IVYBRIDGE- AND LEOPARDS-U/18 RUGBY PLAYERS WITH REGARD TO ANTHROPOMETRICAL VARIABLES**

Variables	Blue Bulls (n=18)		Ivybridge (n=21)		Leopards (n=21)		Blue Bulls vs Ivy-bridge	Blue Bulls vs Leopards	Leopards vs Ivybridge
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	d-value	d-valuee	d-value
Mass (kg)	87.38	14.27	87.84	11.52	84.90	11.76	0.03	0.17	0.25
Length (cm)	185.61	6.57	181.86	7.40	179.52	8.11	0.50	0.75	0.29
Triceps skinfold (mm)	10.33	4.21	13.45	4.79	14.93	5.44	0.65	0.30	0.10
Sub-scapular skinfold (mm)	12.72	5.54	15.65	7.05	12.76	5.08	0.42	0.01	0.41
Mid-axillary skinfold (mm)	10.66	6.36	13.05	8.28	9.00	5.58	0.29	0.26	0.49
Supraspinal skinfold (mm)	14.27	11.10	13.42	4.64	10.85	5.89	0.08	0.31	0.44
Pectoral skinfold (mm)	8.27	4.50	13.07	5.91	7.71	3.64	0.81	0.12	0.91
Abdominal skinfold (mm)	16.97	11.03	19.54	8.46	14.90	8.89	0.23	0.19	0.52
Thigh skinfold (mm)	14.55	6.21	17.25	7.04	13.80	5.13	0.38	0.12	0.49
Calf skinfold (mm)	9.77	5.25	15.28	5.16	8.71	4.40	1.05	0.20	1.27
Forearm girth(cm)	28.83	2.98	28.80	1.30	28.78	1.63	0.01	0.02	0.02
Ankle girth(cm)	23.82	2.28	27.20	1.26	24.98	1.53	1.48	0.51	1.45
Calf girth (cm)	38.20	3.14	40.09	3.07	36.89	3.36	0.60	0.39	0.95

$\bar{x}$ =Mean average
S=standard deviation
High practical meaningful differences: d≥0.8
Medium practical meaningful differences: d≥0.5
Low practical meaningful differences: d≥0.2

Physical and Motor Abilities

From Table 2 it appears that the English elite players did not attain the best achievement in any of the six tests. The Leopard players only achieved the best performance in one test, namely zig-zag running ($\bar{x}$ =5.96 sec.), while the Blue Bulls performed best in the remaining tests.

If we look at the practical meaningful differences between the Blue Bulls and the Leopards, the only big practical significant difference appeared in the zig-zag run (d=2.70). In contrast to the Leopards, the Blue Bulls differ practically meaningfully from the English players in five of the six variables, namely, vertical jump (d=1.16), zig-zag running (d=1.00), speed (d=0.93), grip force left (d=1.04) and grip force right (d=1.19). The Leopards' achievement differs

higher meaningfully in three tests, namely zig-zag running (d=1.64), speed (d=0.97) and grip force left (d=1.11) compared to the English players.

The deduction can be made from Table 2 that the two South African groups with regard to physical and motor abilities achieved better than their English peers, with the Blue Bulls the best achiever.

TABLE 2. **DESCRIPTIVE STATISTICS AND PRACTICAL MEANINGFUL DIFFERENCES (D-VALUES) BETWEEN ELITE BLUE BULLS-, IVYBRIDGE AND LEOPARDS -U/18 RUGBY PLAYERS WITH REGARD TO PHYSICAL AND MOTOR ABILITIES**

Variables	**Blue Bulls (n=18)**		**Ivybridge (n=21)**		**Leopards (n=21)**		**Blue Bulls vs Ivy-bridge**	**Blue Bulls vs Leopards**	**Leopards vs Ivybridge**
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	d-value	d-value	d-valuee
Sit- and reach test (cm)	13.03	3.38	6.64	17.52	13.00	4.93	0.70	0.51	0.36
Vertical jump (cm)	52.40	4.20	44.00	7.26	50.54	8.59	1.16	0.64	0.76
Zig-zag running (sec)	7.24	0.47	6.71	0.38	5.96	0.45	1.00	2.70	1.64
Speed (sec) - 45.7m	6.43	0.48	6.88	0.32	6.53	0.36	0.93	0.21	0.97
Grip force left (kg)	56.05	9.78	45.86	4.70	52.55	6.03	1.04	0.36	1.11
Grip force right (kg)	59.61	7.94	50.15	5.54	55.00	8.22	1.19	0.56	0.59

$\bar{x}$ =Mean average
S=Standard deviation
High practical meaningful differences: d≥0.8
Medium practical meaningful differences: d≥0.5
Low practical meaningful differences: d≥0.2

Game Specific Skills

The results in Table 3 show that the English players only achieved the best results in two of the eight tests, namely side steps ($\bar{x}$ =78%) and air and ground kicks ($\bar{x}$ =73.3%). The Leopards only achieved the best in one test, namely ground skills ($\bar{x}$ =3.28 sec) while the Blue Bulls achieved the best in the remaining five tests. If one looks at the practical meaningfulness in achievement among the three groups, one finds that significant differences occur between the Leopards and Blue Bulls in two tests (side steps: d=1.57 and passing for accuracy: d=0.82). The Blue Bulls achieved meaningfully better than the English in five tests, namely basic skills (d=1.13) passing for distance (d=2.23), kicking for distance (d=2.16), kicking off for distance (d=1.27) and passing for accuracy (d=0.99). Meaningful differences in achievement between the Leopards and the English was found in six variables, with the English best in two tests (side steps: d=2.24 air and ground kicks: d=1.61), and the Leopards meaningfully the best in ground skills, passing for distance, kick for distance and kick-off distance.

Results on game-specific skills proved that the Blue Bulls showed the best results. The only variables that indicated they are not the best, are side-steps, air and ground kicks and passing for accuracy.

TABLE 3. **DESCRIPTIVE STATISTICS AND PRACTICAL MEANINGFUL DIFFERENCES (D-VALUES) BETWEEN ELITE BLUE BULLS-, IVYBRIDGE- AND LEOPARDS-U/18 RUGBY PLAYERS WITH REGARD TO GAME-SPECIFIC SKILLS CHARACTERISTICS**

Variabless	**Blue Bulls (n=18)**		**Ivybridge (n=21)**		**Leopards (n=21)**		**Blue Bulls vs Ivy-bridge**	**Blue Bulls vs Leopards**	**Leopards vs Ivybridge**
	$\bar{x}$	S	$\bar{x}$	S	$\bar{x}$	S	d-valuee	d-value	d-value
Ground skills (sec)	3.43	0.29	3.79	0.31	3.28	0.20	1.13	0.52	1.61
Side steps (%)	71.4	0.86	78.0	0.67	56.1	0.97	0.76	1.57	2.24
Air and ground kick (%)	65.0	1.22	73.3	0.81	57.1	1.00	0.68	0.64	1.61
Passing for accuracy (m)	28.41	3.34	19.66	3.88	25.50	3.97	2.23	0.73	1.47
Passing for accuracy – 4m (n)	6.29	1.92	4.37	1.78	4.47	2.22	0.99	0.82	0.05
Passing for accuracy – 7m (n)	24.50	3.91	23.31	3.85	24.85	3.21	0.31	0.09	0.40
Kick for distance (m)	47.73	6.63	33.16	6.69	47.22	4.13	2.16	0.08	2.10
Kick-off for distance (m)	48.42	11.3	34.03	8.25	47.15	7.19	1.27	0.11	1.59

$\bar{x}$ =Mean average
S=Standard deviation
High practical meaningful differences: d≥0.8
Medium practical meaningful differences: d≥0.5
Low practical meaningful differences: d≥0.2

CONCLUSIONS AND RECOMMENDATIONS

The speed and agility of elite rugby players can be influenced by excess fat body mass carried by players (Nicholas, 1997). Although the fat percentages of the three groups are not indicated, the values of skinfolds and body mass can give an indication that this component had an effect on the English players' poor score in speed. A further conclusion can be made that there are no big differences as far as the body compositions of South African and English players are concerned.

Hare (1997) is of the opinion that big and strong rugby players could possibly achieve better with regard to physical and motor abilities. The fact that the Blue Bulls, after the English, were the heaviest and also the tallest confirms Hare's statement because the Blue Bulls achieved the best in five of the six physical and motor tests. Nicholas (1997) declares that players having a bigger muscle mass show better strength, which can be to the advantage of rugby skills, as was also found in the Blue Bulls' kicking distance compared to that of the

English players. The results of the physical and motor ability tests clearly showed that the English players performed the worst, compared to the South African groups. The Blue Bulls showed the best results.

The poor suppleness of the English players could also have contributed to their weak score in speed according to Nicholas (1997). Carlson *et al*. (1994) found that bigger values in vertical jumps also resulted in better movement speed. This declares why the Blue Bulls show the best speed value, as well as the best vertical jump score in contrast to the English players' scores in these two tests. Overall, the South African teams, performed better. The possibility exists that this may be due to better coaching where coaches give more attention to basic skills. An interesting fact is that the Blue Bulls were the winners of the 2003 Craven Week Rugby Tournament, and the Leopards finished 14th.

It can be concluded from the results of the three groups regarding anthropometrical variables that they do not indicate big differences, and showed a similar pattern. The English players need to improve on their performance in physical and motor abilities, especially their suppleness, explosive strength of the upper legs and grip force. The difference in game-specific skills is not the result of the difference in body composition, but possibly occurred as a result of exposure to rugby skills programmes, practice facilities and exposure to rugby training and physical conditioning. Ericsson and Charness (1995) are of the opinion that success in sport is primarily determined by exercise. If the results of this study are compared to other research as referred to in the Introduction, the conclusion can be made that the English and Leopard players were less exposed to specialist rugby coaching, but it does not mean that they do not have the talent to perform.

It can be stated that comparative research results, among the different rugby playing countries at youth rugby level, are lacking. This study was a first of this kind and helped researchers in this field to compile a profile of the elite 18-year old rugby player. It also contributed to set test norms (average scores) that can be used by coaches at school level to identify potential talented players.

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NOTES